

## **AMENDMENTS TO THE SPECIFICATION:**

Please amend the Specification as follows:

Page 1, between the Title and the first paragraph, insert the following new paragraph:

### **-- CROSS-REFERENCE TO RELATED APPLICATION**

This application is a National Stage entry of International Application Number PCT/JP2003/011674, filed September 12, 2003. The disclosure of the prior application is hereby incorporated herein in its entirety by reference. --

Page 2, paragraph beginning at line 2:

Such process and apparatus for grinding a non-circular rotor work are already known, for example, as disclosed in patent ~~document 4~~ documents 1 and 2.

Page 2, after line 22 and before the Disclosure of the Invention, insert the following new sub-headings and paragraph:

#### **[Patent Document 2]**

#### **Japanese Patent Application Laid-open No.9-160619**

In a process and apparatus for grinding work for non-circular rotor such as a camshaft, the above-described document teaches that a recess or a projection is formed as a standard phase position in a work piece which is subject to grinding, and the recess or projection is detected by a positional sensor, and in place of providing a position as a standard phase, a phase angle at which the sensor output is a maximum using a position of the maximum projection of the work piece as a standard phase, or a phase angle when the sensor output value increases during detection of the maximum

projection and becomes a predetermined value and a phase angle when the sensor output value decreases and becomes a predetermined value are read off and a mean value between these two values is used as a standard phase. By means of such detection technique, it is difficult to detect the maximum projection and the operation of determining the mean value between the two values is complicated. Further, an apparatus for such detection inevitably causes an increase in cost due to the provision of a recess or a projection as a standard phase position and complication in steps of procedures of the detection.

Page 2, paragraph beginning at line 24:

Accordingly, the present invention has been accomplished in view of the above circumstances, and it is an object of the present invention to provide non-circular rotor work-grinding process and apparatus of the above-described type, wherein even if a special recess is and the like are not formed in an outer periphery of a work for a non-circular rotor, the indexing of the standard phase of the work can be achieved properly, thereby enabling a reduction in grinding margin of the work, thus, the shortening of the grinding time, and to provide a camshaft which has a good appearance and which is formed from a camshaft blank whose fabrication is simplified.

Page 3, paragraph beginning at line 9:

To achieve the above object, according to a first aspect and feature of the present invention, there is provided a process for grinding a work for a non-circular rotor for grinding an outer peripheral surface of the work, which includes a base circle portion having a constant curvature radius, and a cam lobe leading to circumferential opposite ends of the base circle portion, by a rotary grindstone advanced and retreated by an NC control depending on the profile of the work, while rotating the work for the non-circular rotor about an axis thereof, characterized in that the following steps are carried out: a

first step of detecting a predetermined lift amount, between the base circle portion and the cam lobe, of the outer peripheral surface of the work at a given point to index a standard phase of the work, and a second step of advancing or retreating the rotary grindstone by the NC control based on the standard phase of the work indexed at the first step to grind the outer peripheral surface of the work.

Page 5, paragraphs beginning at line 9:

With the ~~third~~ second feature, even if a special recess is not formed in the outer periphery of the work, the indexing of the standard phase of the work can be achieved properly by the standard phase sensor, thereby providing a reduction in grinding margin of the work, thus, the shortening of the grinding time. Further, the predetermined lift amount can be detected properly at a given portion from the base circle portion to the cam lobe of the work by the standard phase sensor, and the indexing of the standard phase of the work can be achieved more precisely.

~~According to a fourth aspect and feature of the present invention, in addition to the third feature, the work includes a base circle portion having a constant curvature radius, and a cam lobe leading to circumferential opposite ends of the base circle portion, and the sensor is formed to detect the predetermined lift amount between the base circle portion and the cam lobe.~~

~~With the fourth feature, the predetermined lift amount can be detected properly from the base circle portion to the cam lobe of the work by the standard phase sensor, and the indexing of the standard phase of the work can be achieved more precisely.~~

According to a ~~fifth~~ third aspect and feature of the present invention, there is provided a camshaft which includes cams each comprising a base circle portion ground by the grinding process according to the first ~~or second~~ feature, and a cam lobe leading to circumferential opposite ends of the base circle portion, the camshaft having no recess indicating a standard phase in an outer peripheral surface thereof.

With the ~~fifth~~ third feature, when a blank for the camshaft is to be fabricated, it is unnecessary to form a recess indicating the standard phase in an outer peripheral surface of the blank. Thus, the fabrication of the blank can be simplified, and a good appearance of the camshaft can be provided.